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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, 'OHI'A (WAIANU), WAIOKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI and MAKAPIPI STREAMS	)	Case No.: CCH-MA13-01 OBJECTIONS, IN PART, OF MAUI TOMORROW TO HEARINGS OFFICER'S AMENDED RECOMMENDATION RE INTERIM RESTORATION OF STREAM FLOW; EXHIBIT "A"; MT EXHIBITS "1" – "40"; MT MAPS "1" – "4"; CERTIFICATE OF SERVICE

mt/cwrm/obj

OBJECTIONS, IN PART, OF MAUI TOMORROW TO HEARINGS OFFICER'S AMENDED RECOMMENDATION RE INTERIM RESTORATION OF STREAM FLOW

Maui Tomorrow Foundation, Inc. ("MT"), on behalf of itself and its Supporters, through its undersigned counsel, hereby files its Objections, in part, to the Hearings Officer's Amended Recommendation Re Interim Restoration of Stream Flow, as follows:

I. INTRODUCTION

In January 2016, Alexander & Baldwin ("A&B") announced the closure of sugar operations at HC&S at the end of 2016. On April 20, 2016, A&B announced its decision to fully and permanently restore priority taro streams in East Maui as quickly as possible. A&B represented that, in some cases, diversions could be removed immediately.

In return for this announcement, the Hawaii State Legislature and Governor Ige enacted a law permitting EMI to divert East Maui Streams based upon holdover permits that had been declared illegal by a State Circuit Judge. EMI, HC&S and A&B have by legislative enactment secured the right to divert East Maui Streams for another three years.

Those who are most harmed by these diversions, for the most part, have yet to benefit from A&B's promise to fully and permanently restore "taro" streams in East Maui as quickly as possible.

The plan to restore these streams was formulated on a one-sided basis. EMI met with Commission on Water Resource Management ("CWRM") officials on May 5, 2016 to discuss the "proposed diversion modification plan" which is the subject of EMI's letter dated May 12, 2016 to the CWRM. This letter was not sent to downstream users until May 25, 2016. The "proposed diversion modification plan" does not reflect any collaboration among affected parties. This plan is simply EMI's suggestion.

MT has advocated the interests of downstream users in the Hanehoi Watershed. This hydrologic unit includes five streams that are diverted by as many as four of EMI's major ditches. This significant watershed is vital to many who rely upon its flows. It warrants a more accurate and detailed study than has been provided to date. This pleading may be longer than usual to provide the CWRM with information necessary to make informed decisions.

EMI's "proposed diversion modification plan" is vague and confusing. Most significantly, various different methods are used for identifying particular diversion works in different documents so that cross-referencing is made extremely difficult. In some documents, the diversion works are referenced by name ((e.g. Lowrie Hanehoi (Huelo # 3)). In other documents, this same diversion work is referenced by EMI's numbering system (e.g. L-7). In

yet other documents, this same diversion work is referenced by its Registered Intake Number (e.g. 155.6).

In addition, EMI's plan does not accurately describe the diversion structures that are the subject of its plan. The modifications proposed by EMI are unclear. The permits that EMI represents must be secured are not described with the degree of specificity that would allow persons reviewing the plan to make reasoned judgments as to the length of time it will take to obtain the approvals. It is unclear who will do the work and where the funds will come from to perform this work.

On June 7, 2016, MT received a "revised proposed diversion modification plan" contained within a letter dated June 6, 2016 from EMI to the CWRM. This revised plan purports to address "inadvertently omitted diversions on some small tributaries of Hanehoi stream" on most of which "there are no concrete structures, intake gratings and sluice gates ..." Unfortunately, these statements are not accurate. As an example, EMI has neglected to address major Lowrie Ditch diversion works, L-6, on West Hanehoi Stream, and L-7, on Huelo Stream.

Those who have been harmed by these East Maui diversions for so many years are entitled to a plan with a great deal more specificity and enforceability providing greater assurances that the full flow of these streams will be restored as quickly as possible.

II. PERMANENT ABANDONMENT OF ALL DIVERSIONS AND RESTORATION OF STREAM FLOW TO "TARO" STREAMS

A. CLARIFICATION OF AFFECTED STREAMS AND DIVERSIONS WITHIN THE HANEHOI WATERSHED

The Hanehoi (Puolua) Streams are identified in the Hearings Officer's Amended Recommendation as among those streams for which all diversions are to be permanently abandoned and to be fully restored. The CWRM has identified these as the streams in the

Hanehoi Watershed in the IFSAR for Hanehoi. The two Charts attached to the EMI letter dated May 12, 2016 reference only Hanehoi and Puolua streams.

In fact, there are more than two streams in the Hanehoi Watershed. There are four named streams. There are the East Hanehoi Stream, the West Hanehoi Stream, the Huelo Stream and the Puolua Stream. MT attaches as Exhibits "MT Maps "1" – "4" maps showing the location of these streams within the Hanehoi Watershed.

In addition, there are more diversion works on these streams than have been identified in EMI's plan. On West Hanehoi Stream, there exists, as part of the Lowrie Ditch, Reg. Intake 242.6, designated as L-6 – that is not addressed in EMI's plan. On Huelo Stream, there exists, as part of the Lowrie Ditch, Reg. Intake 155.6, designated as L-7 – that is not addressed in EMI's plan. Any plan to permanently abandon and fully restore streamflow in Hanehoi (Puolua) must include plans to permanently abandon diversions and fully restore streamflow in both of these additional locations.

To help understand the streams within the Hanehoi Watershed and the diversion works that exist upon these streams, MT has prepared an "Amended Chart" that begins with the information included within the Charts attached to the EMI letter but amends this information with additional explanatory information. This "Amended Chart" is attached hereto as Exhibit "A."

MT has also included photographs and maps of all of the streams and diversion works within the Hanehoi Watershed. These photographs are attached hereto as Exhibits "1" – "40." The "Amended Chart" includes references to particular photographs and maps in the attached Exhibits.

B. NEED TO PROVIDE GREATER SPECIFICITY AS TO PERMITTING REQUIREMENTS

1. Greater Clarity on Types of Work Required to be Performed

There needs to be greater clarity of the types of work that EMI is proposing to perform. There are several general proposed types of work.

a. The Simplest: Closing Intake Structures

The simplest form of work proposed, where possible, is (1) to block water from entering grated intake structures by bolting a metal plate over the intake structure and (2) to repair or prevent leakage into the intake structure and into the ditch to assure full restoration of the stream. There are many examples where this is all that is proposed.

b. The Most Complicated: Pipe Within the Ditch

The most complicated proposal of EMI entails:

(1) to construct "wing-walls" mauka of a ditch to guide or contain the stream;

(2) to place a pipe within the ditch with a capacity sufficient to carry anticipated ditch flows;

(3) to cover that pipe to allow the stream to flow over the pipe and the ditch;

(4) to excavate sufficiently on the makai side of the ditch to facilitate the flow of the stream on that side; and

(5) since an EMI maintenance road is usually located makai of the ditch, to construct a concrete channel across the road to prevent erosion.

These are most of the Category 4 projects, shown in green on the EMI Charts, that will take the most permits, work and time.

2. Abandonment of Stream Diversion Works

CWRM staff has clarified that the CWRM approval that is required is a permit to "abandon or remove" any "stream diversion works," pursuant to HAR §13-168-35 of the CWRM Rules. The full and permanent restoration of stream flow in the taro streams would entail the full and permanent abandonment and removal of the diversion works constructed in the stream bed to restore the stream to its natural state – this is decidedly NOT what EMI is proposing. Instead, if its "diversion modification plan" is adopted, hulking cement dams across the complete widths of the streambeds will remain permanently in place – even though they no longer serve any purpose.

MT proposes, in the longer term, the removal of those dams that are not components of the ditches themselves. This is discussed more fully in Section C.1. below.

3. Potential Need for Department of Health Permit

CWRM staff has clarified that if the Army Corps of Engineers assumes jurisdiction over any of the work proposed in a plan approved by the CWRM, that a Department of Health Clean Water permit may be required. Were this to occur, the time frames for completing permitting requirements would be extended much further into the future.

C. NEED TO PROVIDE GREATER SPECIFICITY AS TO IMPLEMENTATION DEADLINES

1. Establishment of Hanehoi Watershed Priorities

MT recommends that the CWRM adopt priorities for the various projects discussed by EMI. MT notes that there are certain projects that could bring the most water to the most downstream users in the shortest amount of time and MT, therefore, respectfully requests that the CWRM specifically adopt these priority projects.

a. East Hanehoi Modifications

East Hanehoi stream is a gaining stream with perhaps the greatest amount of streamflow within it of all of the Hanehoi Watershed streams. As of the present date, its full flow is totally diverted into the Wailoa Ditch (Wailoa/ Hanehoi, W-18, Reg. Intake 191.6). There is little or no flow to be captured in the next ditch not far below, New Hamakua/ Hanehoi, NH-17, Reg. Intake 264.6. The next ditch below is the Lowrie-Hanehoi, L-5, Reg. Intake 240.6. Below that East Hanehoi Stream is diverted at the Haiku-Hanehoi ditch, H-3, Reg. Intake 217.6.

None of the proposed modifications of these ditch diversions, from mauka to makai, are of the long-term complicated variety. Instead the proposed diversion modifications for East Hanehoi stream are of the simpler, shorter term variety.

Many of the supporters of MT who have advocated for stream restoration for the last twenty or thirty years have water rights to the streamflow in East Hanehoi stream.

Based upon the foregoing, MT requests that the CWRM specifically find that the modifications to East Hanehoi stream are priority projects and that EMI is directed to give them implementation priority.

b. Lower Puolua Stream

Haiku-Puolua, H-4, diversion is, likewise, of the simpler, shorter term variety. This water has long been awaited by taro grower Ernest Schupp to allow him to grow healthy taro below this diversion. As such, MT also requests that the CWRM specifically find that this modification to Puolua stream is a priority project and that EMI is directed to give this project implementation priority.

2. Remove/Open All Sluice Gates

Most of the diversion works include sluice gates that can be opened to allow greater amounts of the streamflow to pass downstream of the diversions. Within the Hanehoi Watershed, many of these sluice gates have not yet been fully opened. See, MT Ex. #3, 37. The full opening of these sluice gates is a simple act that would help to restore streamflow "as quickly as possible." The CWRM should instruct EMI to fully open all of these sluice gates immediately.

The modification plan should include a provision requiring the complete removal of the sluice gates.

3. The Plan Must Include, in the Long Term, Removal of Diversion Structures That Impede Natural Stream Flow When Feasible to do So

EMI has committed to the full and permanent restoration of streamflow within streams in the Hanehoi Watershed. Any plain understanding of this commitment would include the complete removal of the structures placed within streambeds obstructing the natural flow of the streams. EMI's plan does not come close to accomplishing this goal.

Instead, where a diversion works has been constructed across a stream, obstructing downstream flows, and that diversion works also is a component of EMI's ditch system carrying diverted waters from East Maui to the Central Isthmus, EMI has proposed to leave that diversion structure within the streambed. There may or may not be practical reasons for leaving these diversion works in place within some streams. This is not a full restoration of natural streamflow. These may still cause adverse impacts to some protected stream species and/or other natural processes that must be mitigated.

Examples of dams that can be removed are referenced in the Amended Chart attached as Exhibit "A." Those dams can be removed that do not comprise a part of ditches that are planned to carry water from East Maui to the Central Isthmus in the future. There are two such types of dams.

a. Where the Ditch is Located in a Tunnel Many Feet Below the Streambed

First, there are dams that are part of diversions in which the ditch is located 50 to 70 feet below in a tunnel and the ditch in the tunnel below would not be affected by the removal of the dam. The dam at Wailoa/ Hanehoi, W-18, Reg. Intake 191.6 is such a dam. At that point the Wailoa

ditch is located in a tunnel 50 to 70 feet below the stream. Removal of the dam would have no impact on the ability of Wailoa Ditch to continue to carry water in the future. See, MT Ex. #2, 4.

Another like example, is the dam at Haiku-Puolua, H-4. Again, at this location, the Haiku Ditch is located in a tunnel 40 or 50 feet below the dam and below the streambed. Removal of the dam would have no impact on the ability of Wailoa Ditch to continue to carry water in the future. See, MT Ex. #36.

b. Where the Intake Grate is Not Part of the Ditch

Second, there are many instances in which the intake grate is not part of the ditch and the intake grate runs mauka to makai along one side of the streambed. In these instances, the dam across the streambed is not part of the ditch and removal of the dam would not affect the ability to continue to carry water in the future.

An example of this sort of situation is New Hamakua/ Hanehoi, NH-17, Reg. Intake 264.6. See, MT Ex. #6. Another example is Lowrie-Hanehoi Huelo #3, L-7, Reg. Intake 155.6. See, MT Ex. #21, 22. In both of these examples, the intake grate and dam are not part of the ditch. Closure of the intake grate and removal of the dams would not affect the ability to continue to carry water in the future.

D. NEED FOR WATERSHED AND WATERCOURSE MAINTENANCE

As many of the photographs presented here by MT demonstrate, the streambeds of many of the Hanehoi Watershed heretofore dewatered streams have become clogged with invasives and other vegetation that in some cases "suck" streamflow, otherwise prevent the healthy functioning of these streams and, importantly, impede streamflow and prevent the full restoration of these streams.

Full stream restoration cannot be accomplished without watershed and watercourse maintenance. As a component of this plan, MT recommends that CWRM include provisions that facilitate access by community members to streams within this Watershed for the purpose of clearing invasives and other debris from these streambeds to aide in the full restoration of these streams.

E. NEED FOR MONITORING AND MONITOR

MT also recommends that terms and conditions must be adopted by the CWRM that provide for the monitoring of progress in implementing the plan to assure that it actually is accomplished "as quickly as possible."

MT further recommends, at least with respect to the Hanehoi Watershed, that the CWRM appoint a committee, with representatives from the CWRM staff, EMI and MT to work in a collaborative manner in implementing this plan.

MT also recommends that the CWRM appoint a "Monitor" whose responsibility it is to monitor progress and to periodically report to the CWRM and the parties on the progress that has (or has not) been made.

III. INTERIM ORDER WITH RESPECT TO REMAINING STREAMS

The Hearings Officer has recommended that the remainder of his recommendations – regarding the "non-taro" streams shall remain in place. MT requests that the CWRM implement these recommendations immediately.

DATED: Wailuku, Maui, Hawaii 6.10.16

Isaac Hall
Attorney for Maui Tomorrow Foundation,
Inc. and its Supporters

CERTIFICATE OF SERVICE

I hereby certify that one copy of the foregoing document was duly served upon the parties listed below by email, on June 10, 2016.

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EXHIBIT "A"
AMENDED CHART
HANEHOI WATERSHED

Diversions	East Hanehoi	West Hanehoi	Huelo (East and West Branches)	Puolua (East and West Branches)
Wailoa	Div. #1 W-18 Reg. Intake 191.6 Wailoa/ Hanehoi (III) MT Ex. #4, 2, 5 Grate diversion MT Ex. #1 sluice gate open only 1" MT Ex. #3 **Dam can be removed (Ditch in tunnel many feet below diversion)** MT Ex. #4 EMI: Intent is to seal 3 ft x 5 ft intake grate by bolting steel plate. Haiku, Lowrie and New Hamakua ditch project needs to be completed prior to work on this diversion. Blue/#3: 3 to 4 months after obtaining all required approvals and completing any required consultations AC, 1, 3	N/A	N/A	N/A

New Hamakua	Div. #2 NH-17 New Hamakua/ Hanehoi (IV) Reg. Intake 264.6 MT Ex. #8, 9 Grate diversion (covered by debris) MT Ex. #6, 7 **Dam could be removed (grate to side of dam)** MT Ex. #6, 7 EMI: Sealing of stream intake is by bolting plates over intake grate. Haiku and Lowrie ditch project work needs to be completed prior to work on this diversion. Option of passing stream in pipe/culvert over ditch, but this may complicate CWA Section 404 exemption. Haiku and Lowrie ditch projects needs to be completed prior to work on this diversion. Green/#2 1 to 2 months after obtaining all required approvals and completing	Div. #1 NH-17a (EMI) New Hamakua/ West Hanehoi(IV) MT Ex. #27 EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate large diameter pipe to handle up to 100 MGD. Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD. Haiku ditch project needs to be completed prior to work on this diversion. Pink/ #4 12 to 15 months after obtaining all required approvals and completing any required consultations Option of passing		Div. #1 NH-17a (NH-18a) (EMI) (incorrect) New Hamakua/ Puolua (IV) MT Ex. #29, 30 Stream crosses road above ditch, cars cross stream EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate large diameter pipe to handle up to 100 MGD. Option of passing stream in pipe/culvert over ditch, but this may complicate CWA Section 404 exemption. Haiku and Lowrie ditch projects needs to be completed prior to work on this diversion. Pink #4 1,2,3,4 5 to 6 months after obtaining all required approvals and completing any required consultations

	any required consultations AC,1,2,3	stream in pipe/culvert over ditch, but this may complicate CWA Section 404 exemption. Haiku and Lowrie ditch projects needs to be completed prior to work on this diversion.		
Lowrie	Div. #3 L-5a EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD. Haiku ditch project needs to be completed prior to work on this diversion. 12 to 15 months after obtaining all required approvals and completing any required consultations Div. # 4 L-5 Reg. Intake 240.6 Lowrie-Hanehoi (I) Grate diversion MT Ex. #10	Div. #2 L-5b Lowrie-West Hanehoi #1 (IV) EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD. Haiku ditch project needs to be completed prior to work on this diversion. 12 to 15 months after obtaining all required approvals and completing any required consultations Div. #3 L-5c Lowrie-Hanehoi small EMI:	Div. #1 L-7 Reg. Intake 155.6 Lowrie-Hanehoi Huelo #3 (I) MT Ex. #19, 20, 21, 22 Grate diversion MT Ex. #22 **Dam could be removed (Grate is to one side of ditch)** EMI: Sealing of stream intake is by bolting plates over intake grate. Need to repair leakage into ditch along edge if grate first. Haiku ditch project work needs to be completed prior to work on this diversion. Yellow/#1 4 to 6 months after obtaining all required approvals and completing any required consultations	Div. #2 L-7a Reg. Intake 225.6 Lowrie-Puolua (IV) MT Ex. #28, 29 Deteriorating 4” pipes thereafter joined to 8” pipe; 4” pipes regularly blocked with debris; Just above Schupp kuleana MT Ex. #30, 31, 32, 33, 34, 35, MT Vid. #1 Stream crosses road above ditch, cars cross stream EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD.

	2 4" bypass pipes totally blocked MT Ex. #11, 12, 13, 14 Huelo Community pipe is above this diversion East Hanehoi Stream Intake 538.6 MT Ex. #15 EMI: Sealing of stream intake is by bolting plates over intake grate. Need to repair leakage into ditch along edge if grate first. Haiku ditch project work needs to be completed prior to work on this diversion. Yellow/#1 4 to 6 months after obtaining all required approvals and completing any required consultations 1,3	Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD. Haiku ditch project needs to be completed prior to work on this diversion. Pink/ #4 12 to 15 months after obtaining all required approvals and completing any required consultations Div. #4 L-6 Reg. Intake 242.6 Lowrie-Hanehoi Huelo #2 (I) MT Ex. #16, 17, 18 EMI: Sealing of stream intake is by bolting plates over intake grate. Need to repair leakage into ditch along edge if grate first. Haiku ditch project work needs to be completed prior to work on this diversion.	Div. #2 L-7b Lowrie-West Hanehoi #2 (IV) (incorrect) EMI: Ditch is cut into stream bed, so would need to install a pipe or box culvert with wing walls in the stream bed through which the ditch can pass beneath the stream. Anticipate up to 42-inch diameter pipe to handle 60 MGD. Haiku ditch project needs to be completed prior to work on this diversion. Pink/ #4 12 to 15 months after obtaining all required approvals and completing any required consultations	Haiku ditch project needs to be completed prior to work on this diversion. Pink/#4 1,2,3,4 12 to 15 months after obtaining all required approvals and completing any required consultations

		Yellow/ #1 4 to 6 months after obtaining all required approvals and completing any required consultations		
Haiku	Div. #5 H-3 Reg. Intake 217.6 Haiku-Hanehoi (I) MT Ex. #26 Grate diversion MT Ex. #23, 24 Sluice completely Closed 4/16 MT Ex. #25 Pipes removed in last 10-15 yrs Holes left were filled with cement **Dam can be removed (Grate is to side of ditch)** MT Ex. #24 EMI: Sealing of stream intake opening is by bolting plate over intake grate openings in intake grate. Yellow/#1 4 to 6 months after obtaining all required approvals and completing any required consultations 1, 3			Div. #3 H-4 Haiku-Puolua (I) Waterfall and pool just above Haiku diversion MT Ex. #40 Grate diversion MT Ex. #39 Bypass pipes MT Ex. #36 Sluice gate should be opened MT Ex. #37, 38, **Dam can be removed (Ditch is in tunnel many feet below dam)** EMI: Sealing of stream intake is by bolting small plate over opening into ditch (not in stream). Yellow/#1 4 to 6 months after obtaining all required approvals and completing any required consultations

1 CWRM approval – diversion abandonment permit
2 OCCL (conservation) site plan approval
3 USACE consultation/approval
4 Extensive work required
5 DoH permit

Hanehoi Stream Diversions

Hanehoi stream is diverted by:

Wailoa & New Hamakua Ditches
E. & W. Hanehoi streams and their tributary, Huelo Stream are all separately diverted by Lowrie Ditch
Hanehoi Stream, after its confluence with Huelo and W. Hanehoi stream, is diverted by Haiku Ditch

Wailoa Ditch Diversion-Hanehoi Stream (W-18) 191.6

Water collected thru diversion grate (57” wide x 78” long) Grate could be sealed with iron plate w/ no modification in stream channel. View downstream

MT EX #1
5/2016

Wailoa Ditch Diversion (W-18) 191.6)

MT EX #2

5/2016

Diversion structure W-18 spans Hanehoi stream channel. Minimal flow in stream past ditch structure beyond stagnant pond in foreground of picture

Wailoa Ditch Diversion-Hanehoi Stream (W-18) 191.6

Diversion structure W-18
Hanehoi Stream

Sluice gate on stream channel.
Gate open 1 in. or less allows minimal flow in stream past ditch structure

MT EX #3
5/2016

Wailoa Ditch Diversion- Hanehoi Stream (W-18) 191.6

Diversion structure W-18- showing East Hanehoi natural stream flow.

View is upstream of diversion structure

MT EX #4

5/2016

Wailoa Ditch Diversion-Hanehoi Stream (W-18) 191.6

E. Hanehoi stream immediately below Diversion structure W-18- showing stream bed with little flow except wet rocks downstream of diversion structure and stagnant pond

New Hamakua Ditch Diversion- Hanehoi Stream (NH-17) intake 264.6

MT EX #6
5/2016

Hanehoi Diversion structure
NH-17/ 264.6

located on East Hanehoi stream channel, several hundred ft. makai (downstream) of Wailoa intake 191.6.
Appears this intake has not had regular flows to divert. Grate covered in debris (right side behind dam wall-see next slide)

New Hamakua Ditch Diversion-Hanehoi Stream (NH-17) intake 264.6

MT EX #7
5/2016

Diversion structure
NH-17/ 264.6

Closeup of grate on East Hanehoi stream channel. Intake grate is 88” across at dam end and much narrower (48” wide) at upstream end. Grate is 24 ft long and covered in debris (May 2016)
Diversion could be bypassed by covering grate.

New Hamakua Ditch Diversion-Hanehoi Stream (NH-17) intake 264.6

Hanehoi stream, immediately upstream of Diversion structure NH-17/ 264.6 on East Hanehoi stream channel. Stream bed overgrown w/ invasive plants w/ little flow

MT EX #8

5/2016

New Hamakua Ditch Diversion-Hanehoi Stream (NH-17) intake 264.6

East Hanehoi stream immediately downstream of Diversion structure NH-17/ 264.6 on East Hanehoi stream channel.

Stream bed overgrown w/ invasive trees and plants.

MT EX #9

5/2016

Lowrie Ditch Diversion- E. Hanehoi Stream (L-5) intake 240.6

East Hanehoi stream at Lowrie Ditch

Diversion structure L-5/ 240.6 on East Hanehoi stream channel. Huelo Community pipe (Intake 538.6) located upstream a few hundred yards.
Intake grate could be bypassed by covering with iron plate or cement. allowing streams to flow.

MT EX #10
5/1989

Lowrie Ditch Diversion- E. Hanehoi Stream (L-5) intake 240.6

East Hanehoi stream
Lowrie Ditch intake

bypass pipes in Diversion structure
L-5/ 240.6 on East Hanehoi stream channel. Pipes are subject to blockage on upstream side.

HC&S was asked to modify this diversion to allow native streamlife to travel.

MT EX #11
8/2013

Lowrie Ditch Diversion- E. Hanehoi Stream (L-5) intake 240.6
Close up of bypass pipes shown in previous slide.
Pipes commonly get clogged.

MT EX #12
8/2013

Lowrie Ditch Diversion- E. Hanehoi Stream (L-5) intake 240.6

East Hanehoi stream at Lowrie Diversion structure

L-5/ 240.6 on East Hanehoi stream channel. View upstream.

Two 4” pipes (left side of diversion) carry water into a stagnant pond below diversion. This is only water that bypasses Lowrie diversion except during storms.

MT EX #13

7/2012

Lowrie Ditch Diversion- E. Hanehoi Stream (L-5) intake 240.6

East Hanehoi stream
Intake Lowrie Ditch

Far view, immediately downstream of Diversion structure L-5/ 240.6 on East Hanehoi stream channel. Stream bed overgrown w/ invasive plants.
EMI service road crosses stream bed (cement area)

MT EX #14
7/2012

Pool Above Lowrie Ditch Diversion- E. Hanehoi Stream intake 538.6

East Hanehoi stream pool above Diversion structure
L-5/ 240.6 on East Hanehoi stream channel. Huelo Community pipe (Intake 538.6) located upstream a few hundred yards in a small pool.

MT EX #15
8/2013

Lowrie Ditch Diversion- W. Hanehoi Stream (L-6) intake 242.6

West Hanehoi stream intake at Lowrie ditch

Diversion structure L-6/ 242.6 on West Hanehoi stream channel. This diversion is not discussed in A&B's first draft plan for stream restoration of Hanehoi stream, yet W. Hanehoi is a tributary of Hanehoi stream that joins E. Hanehoi just mauka of the New Haiku Ditch diversion **(See Slide 20 Map)**

MT EX #16
5/1989

Lowrie Ditch Diversion- W. Hanehoi Stream (L-6) intake 242.6

West Hanehoi stream intake at Lowrie ditch

Closeup of Diversion structure
L-6/ 242.6 on West Hanehoi stream channel.

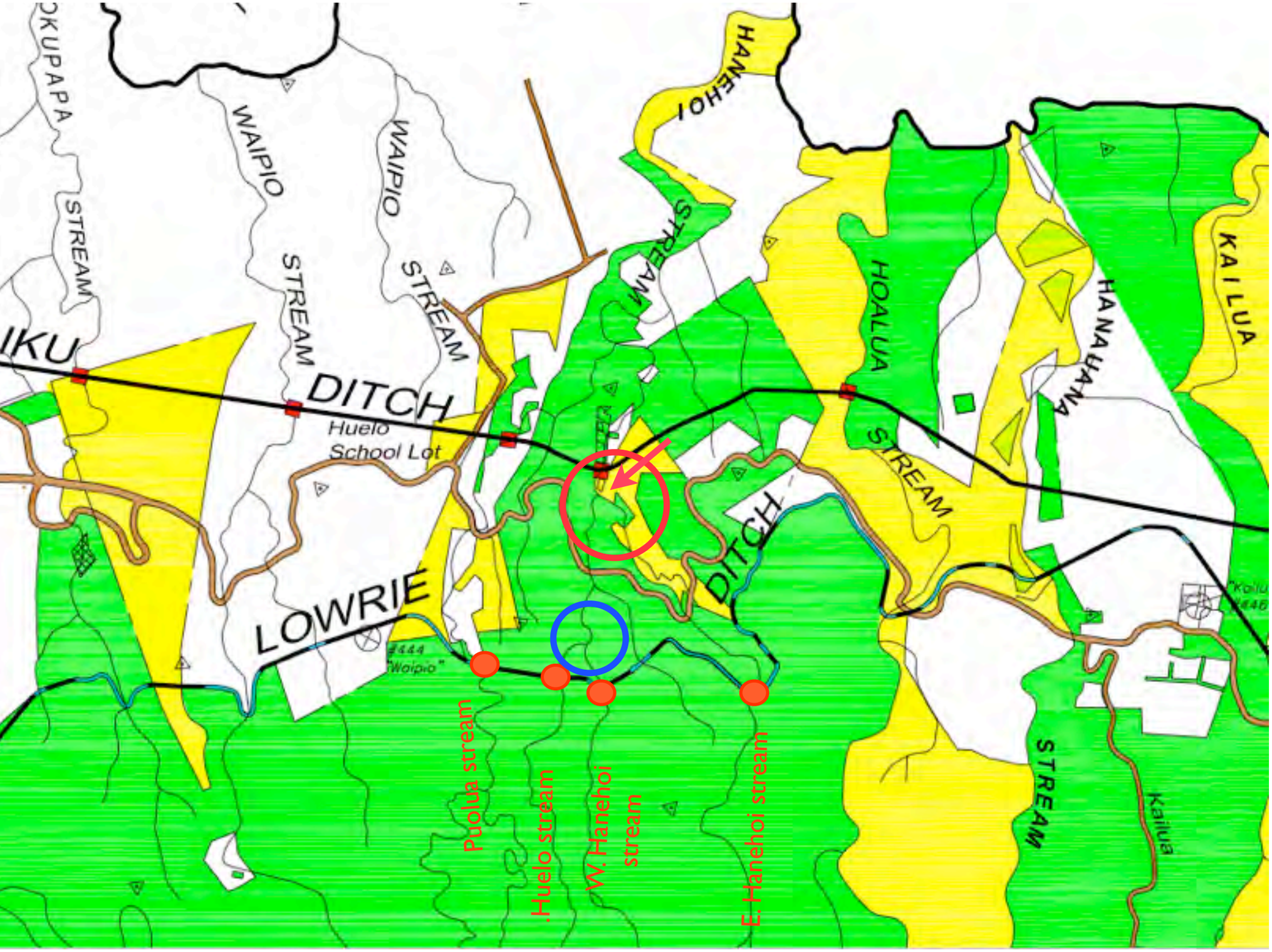
Grate structure carries water to ditch. View is downstream of diversion intake. Not discussed in A&B's plan for stream restoration of Hanehoi stream.

MT EX #17
10/2009

Lowrie Ditch Diversion- W. Hanehoi Stream (L-6) intake 242.6

Spillway crossing at
W. Hanehoi Stream
over Lowrie Ditch
makai view

MT EX #18
10/2009



MT Map #1

A&B EXH C-01 Map

Red circle shows where E. & W. Hanehoi Streams meet, just mauka of Haiku ditch.

Blue circle is where W. Hanehoi and Huelo streams meet, just makai of Lowrie ditch

Shown on EXH C-01-A&B Map of streams and ditch system

E. & W. Hanehoi, Huelo and Puolua streams each have a diversion intake @ Lowrie ditch (red dots).

Restoration Plan needs to address these diversions

Lowrie Ditch Diversion- Huelo Stream (L-7) intake 155.6

MT EX #19
5/1989

Huelo stream intake at Lowrie ditch

Diversion structure L-7/ 155.6 on Huelo stream channel.
This diversion is not discussed in A&B's first draft plan for stream restoration of Hanehoi stream, yet Huelo is a tributary of the Hanehoi stream. Huelo stream joins W. Hanehoi stream just makai of the Lowrie Ditch.
(see map #1 on slide 20)

Lowrie Ditch Diversion- Huelo Stream (L-7) intake 155.6

Huelo stream intake at Lowrie ditch

View down Lowrie ditch of diversion structure L-7/ 155.6 on Huelo stream channel.

This diversion is not discussed in A&B's first draft plan for stream restoration of Hanehoi stream, yet it is a substantial diversion structure

MT EX #20

10/2009

Lowrie Ditch Diversion- Huelo Stream (L-7) intake 155.6

Huelo stream intake at Lowrie Ditch

Spillway over Lowrie Ditch mauka view

MT EX #21

10/2009

Lowrie Ditch Diversion- Huelo Stream (L-7) intake 155.6

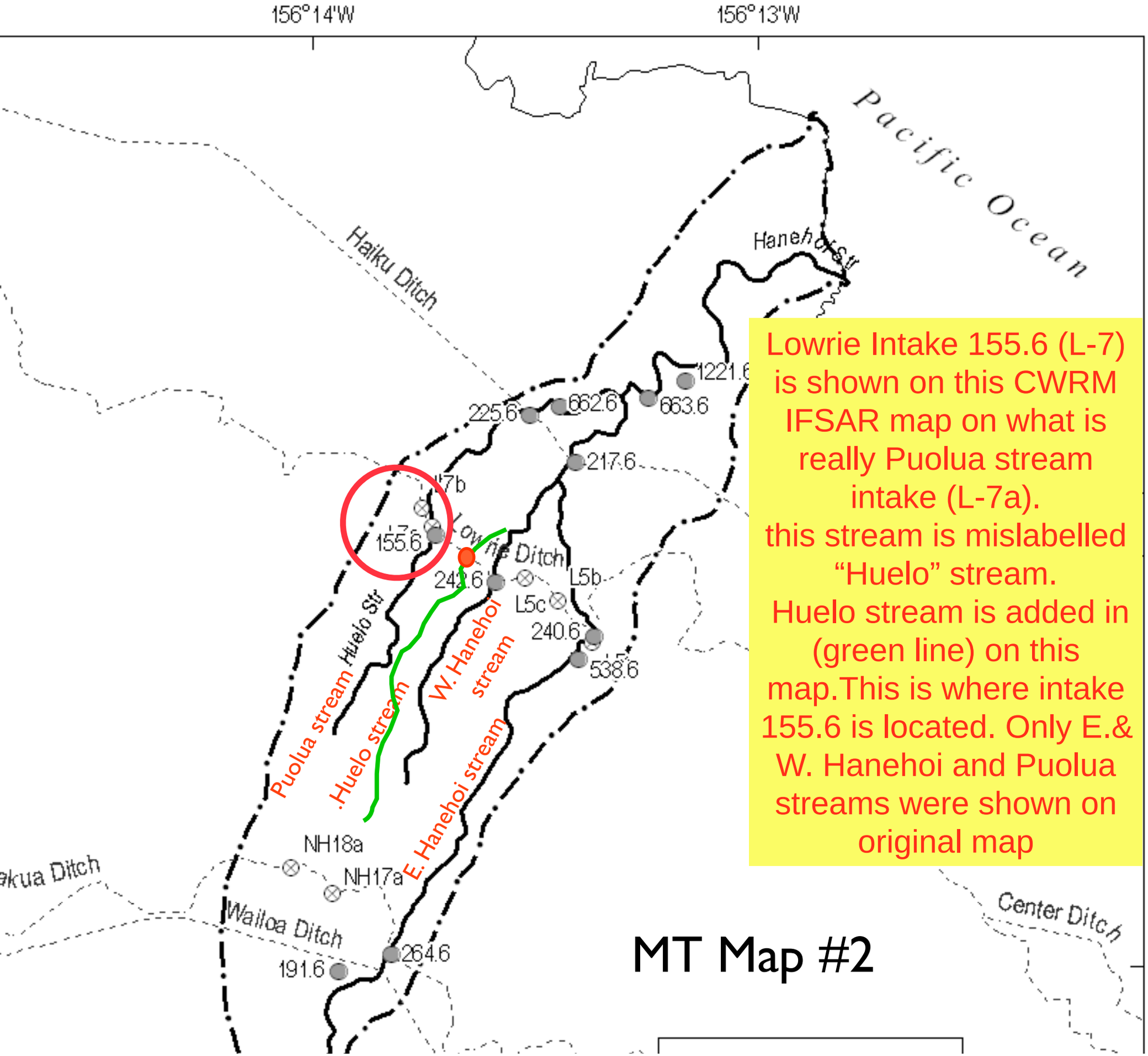
Huelo stream intake at Lowrie ditch

View of Lowrie ditch intake grate L-7/ 155.6 on Huelo stream channel. This diversion is not discussed in A&B's first draft plan for stream restoration of Hanehoi stream, yet it appears the grate could be covered to allow flow.

MT EX #22

10/2009

gistered diversions and EMI minor diversions identified in the Hanehoi hydrologic unit (Source: East Maui
, 1970; State of Hawaii, Commission on Water Resource Management, 2008e).



Lowrie Intake 155.6 (L-7) is shown on this CWRM IFSAR map on what is really Puolua stream intake (L-7a). this stream is mislabelled “Huelo” stream. Huelo stream is added in (green line) on this map.This is where intake 155.6 is located. Only E.& W. Hanehoi and Puolua streams were shown on original map

Huelo stream & intake actually exists, but is mislocated on CWRM’s IFSTAR Map for Hanehoi Unit (2008).

Puolua stream is incorrectly labelled “Huelo Stream” on this map. They are not the “same stream”

See A&B’s EXH C-01 map in Slide 20 for correct locations.

Maui County Plat Map 2-9-09
Clearly shows three streams crossing Lowrie ditch

Lowrie Ditch (Blue) & three streams that are diverted by the ditch.

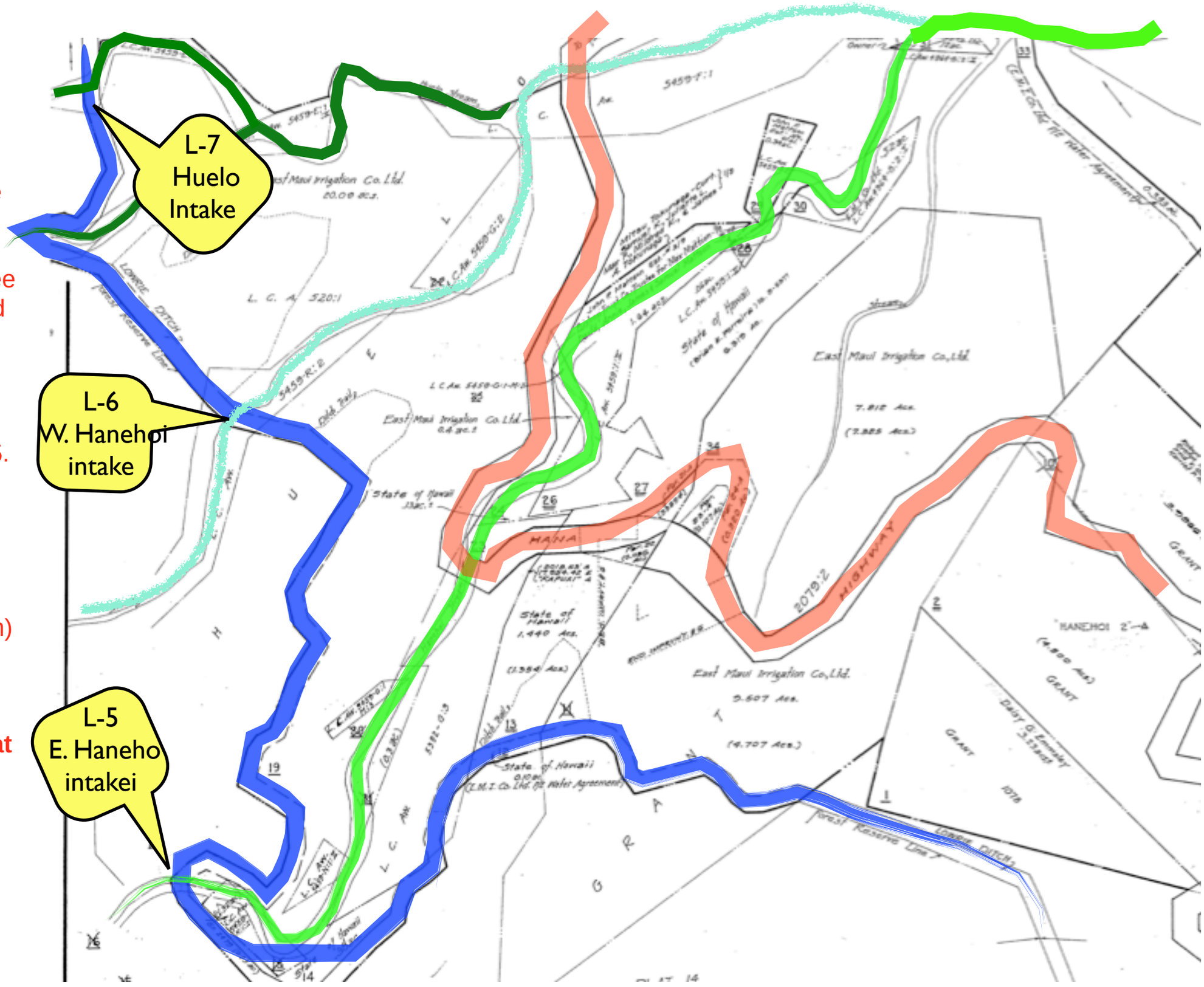
East Hanehoi stream (brite green) crosses Lowrie ditch at intake L-5.

West Hanehoi stream crosses Lowrie ditch at intake L-6.

Huelo stream (dark green) crosses Lowrie Ditch at intake L-7.

Puolua stream is on Plat map 06 so it does not show here.

Hana Hwy is red



MT Map # 3

County Plat Map 2-9-06

Huelo Stream Lowrie Intake 155.6 (L-7) (blue circle) is shown.

Puolua stream intake on Lowrie Ditch is circled in red.

They are two completely different streams with separate diversions

Huelo stream is not shown on CWRM maps but is on Plat maps and EMI maps

MT Map #4

New Haiku Ditch Diversion- Hanehoi Stream (H-3) intake 217.6

Hanehoi stream immediately up stream of Diversion structure H-3/ 217.6 on Hanehoi stream channel. Grate on left transports stream water to New Haiku Ditch tunnel.

Concrete dam blocks downstream flow and becomes filled up with large rocks.

West and East branches of Hanehoi stream join just mauka (upstream) of the Haiku Ditch diversion & become one stream (Hanehoi)

MT EX #23

5/2016

New Haiku Ditch Diversion- E. Hanehoi Stream (H-3) intake 217.6

Close view of Haiku intake grate on Hanehoi stream. Part of Diversion intake structure H-3/ 217.6 on Hanehoi stream channel.
If grate was sealed water could not enter New Haiku Ditch tunnel intake channel and would overflow dam into stream bed, but dam may need modification to allow large rocks to move naturally downstream.

MT EX #24
5/2016

New Haiku Ditch Diversion- E. Hanehoi Stream (H-3) intake 217.6

New Haiku Ditch

Hanehoi stream Diversion structure H-3/ 217.6 on Hanehoi stream channel. Sluice gate completely closed. (May 2016) Only minimal flows bypasses H-3 diversion structure.

If gate was removed , there is risk of large stones blocking opening

MT EX #25

5/2016

New Haiku Ditch Diversion- Hanehoi Stream (H-3) intake 217.6

New Haiku Ditch
Hanehoi stream

Makai view of dry Hanehoi stream immediately downstream of New Haiku diversion intake 217.6 (H-3).
EMI owns overgrown stream bed and does not maintain.

Minimal flow bypasses H-3 diversion structure compared to upstream flow.
Puolua stream joins Hanehoi stream further makai (downstream) of Haiku Ditch.

MT EX #26
5/2016

Puolua Stream Diversions

Puolua stream is diverted by:
New Hamakua
Lowrie &
Haiku Ditches

New Hamakua Ditch Diversion- Puolua Stream (NH-17a) intake

New Hamakua Ditch Puolua stream

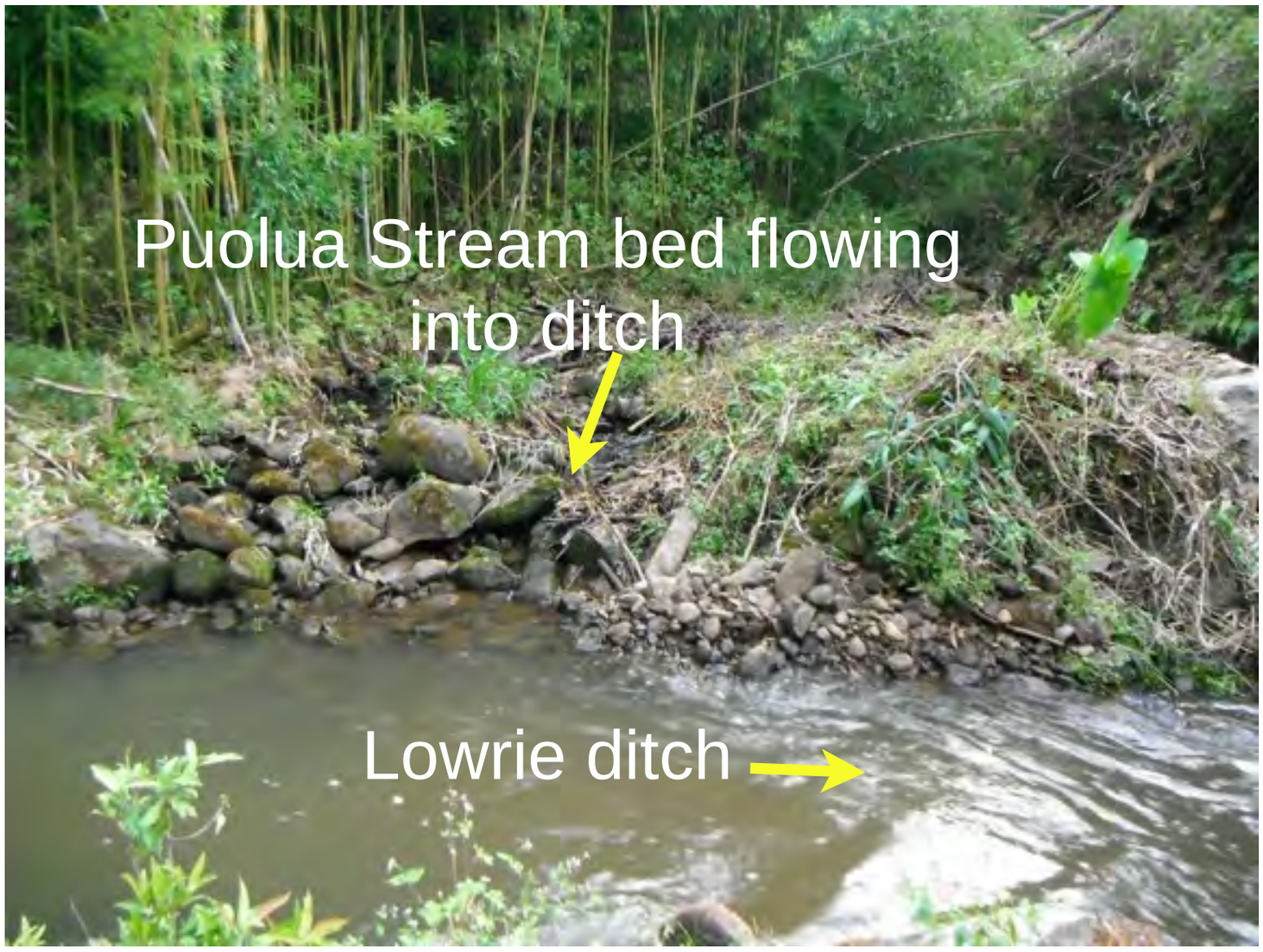
Puolua flow is captured directly into the New Hamakua Ditch.

New Hamakua Ditch and EMI service road would need modification to allow flow to continue makai

MT EX #27

5/2016

Lowrie Ditch Diversion- Puolua Stream (L-7a) intake



MT EX #28
3/2015

Lowrie Ditch
Puolua stream

Puolua flow is captured directly into the Lowrie Ditch with no grate structure

Lowrie Ditch and EMI service road would need modification to allow flow to continue makai

Lowrie Ditch
near Puolua stream

Lowrie Ditch has open sections and tunnel sections.
A dirt EMI service road runs just makai (to right) of the ditch

MT EX #29
3/2015

Lowrie Ditch Diversion- Puolua Stream (L-7a) intake (Oct 2009)

Lowrie Ditch
Puolua stream

For decades these two leaky 4” pipes ran under EMI service road to a 8” PVC pipe and provided the only downstream flow into Puolua stream past Lowrie Ditch intake. Pipes were often clogged.

EMI replaced pipes with 8 inch pipe in 2015

MT EX #30
10/2009

MT Vid #1
3/2013

Video of Lowrie Ditch at Puolua stream intake

Video shows how a portion of Puolua flow is channeled towards new 8 inch wide bypass pipe, while the remaining flow is captured directly into the Lowrie Ditch. Video 3/2015

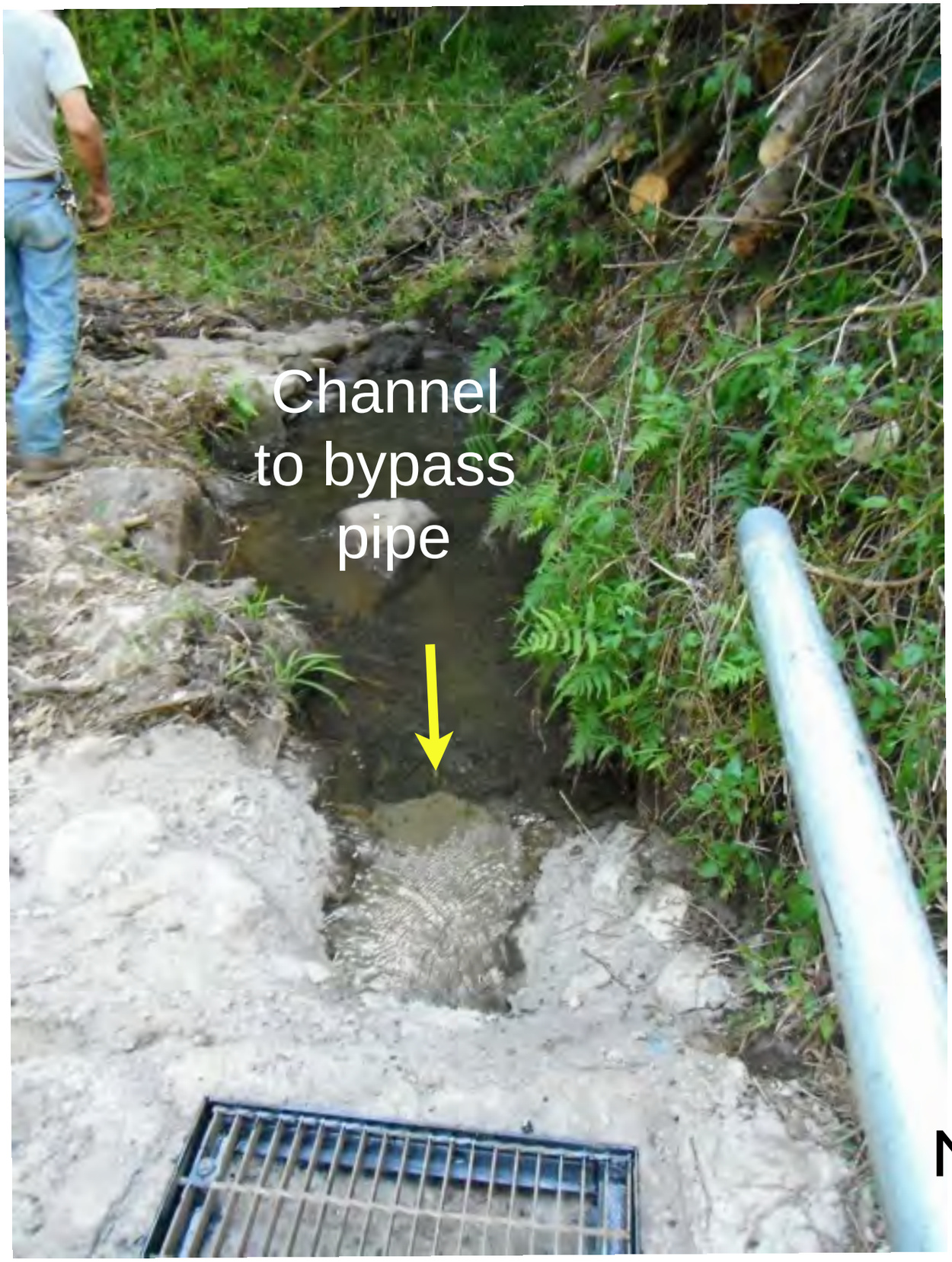
Lowrie Ditch Diversion- Puolua Stream (L-7a) intake (March 2015)

Lowrie Ditch at Puolua stream

Lowrie Ditch flows under new 8” bypass pipe and into a tunnel. A dirt EMI service road runs along ditch, and Puolua stream continues makai of the road

MT EX #31

3/2015



Lowrie Ditch
at Puolua stream

Puolua stream was modified to create a channel for a portion of stream water to flow into new 8” bypass pipe that passes under the EMI service road and empties into Puolua stream makai of the road

MT EX #32
3/2015

Lowrie Ditch
Puolua stream bypass pipe

Makai end of new 8” bypass pipe that currently passes under EMI dirt service road and conveys stream water into Puolua stream.

Puolua stream has a bend where dirt road crosses and restoring the stream across the service road will require a concrete area for stream flow and native stream life

MT EX #33
3/2015

MT EX #34

3/2015

Lowrie Ditch
Puolua stream intake
L-7a

Far view of Lowrie Ditch intake at Puolua stream.

Overgrown Puolua stream bed (owned by EMI) is in foreground. Bypass pipe passes under service road & empties into stream (red circle.)
Road would need to be modified if stream flowed. Blue line shows natural curve in stream channel

Puolua stream just upstream of Lowrie Ditch Diversion L-7a

Puolua stream bed and surrounding land are all “owned” by EMI/A&B, who do not maintain the stream channel. It is choked with alien species and fallen trees, impeding stream flows.

MT EX #35

3/2015

New Haiku Ditch Diversion- Puolua (H-4) intake (2/2009)

Haiku Ditch Intake at Puolua stream

Puolua stream channel is dammed and passed through a grate into New Haiku Ditch tunnel.

Bypass pipes (red circle) at this diversion allow some water to return to stream as does a partially open sluice gate (next slide)

MT EX #36

2/2009

New Haiku Ditch Diversion-
Puolua (H-4) intake

EMI Sluice Gate on Puolua Stream
Feb 2009

For restoration of flows,
gate needs to be removed.
Grate behind dam needs to be sealed.

Area appears to have been
cleared and cleaned by EMI for 2009
CWRM visit.
Usually, area is very overgrown
(next slide)

MT EX #37
2/2009

New Haiku Ditch Diversion- Puolua (H-4) intake (4/2011)

Haiku Ditch Intake gate at Puolua stream

Same sluice gate as last slide, two years later- April 2011- on Haiku Ditch/Puolua intake.(same white bucket on diversion gate handle)

Passing of two years has brought no regular maintenance by the landowner EMI/A&B.

Visits by CWRM to Puolua stream to monitor IIFS compliance ended in 2009.

MT EX #38

4/2011

New Haiku Ditch Diversion- Puolua (H-4) intake (4/2011)

Haiku Ditch Intake gate at Puolua stream

View downstream to Haiku Ditch/Puolua intake wall (arrow) buried under fallen Roseapple trees.

No regular maintenance of stream channel by the landowner EMI/A&B. This must be part of stream restoration plan.

Visits by CWRM to Puolua stream to monitor IIFS compliance ended in 2009.

MT EH #39

4/2011

Feb 2009
Puolua Stream
Waterfall and pool just upstream of Haiku Ditch on EMI/A&B land.

This pool once had recreational use by local families, but the stream bed is now overgrown

MT EX #40
2/2009

Conclusions:

- W. Hanehoi and Huelo Lowrie Ditch stream diversions need to be clearly noted the restoration plan. They are tributaries of Hanehoi stream.

- Maintenance of stream channels needs to be addressed in the restoration plan.

- Puolua/New Hamakua and Puolua/Lowrie diversions will need modifications of the EMI service roads. Possibly other diversions as well.

- The dam structure on Hanehoi@Haiku ditch will likely need to be modified to let large stones travel along stream.